OBLON
SPIVAK
McCLELLAND
MAIER
&
NEUSTADT
P.C.

ATTORNEYS AT LAW

GREGORY J. MAIER
(703) 413-3000
GMAIER@OBLON.COM

CHRISTOPHER D. WARD
SENIOR ASSOCIATE
(703) 413-3000
CWARD@OBLON.COM

Docket No.: 206576US3

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

RE: Application Serial No.: 09/847,084
Applicants: Takashi OISHI, et al.
RCE Filed: November 20, 2003
For: DOOR FOR REFRIGERATOR AND METHOD OF PRODUCING THE DOOR FOR REFRIGERATOR
Group Art Unit: 3635
Examiner: HORTON, Y.

SIR:

Attached hereto for filing are the following papers:

APPEAL BRIEF UNDER 37 C.F.R. § 41.37
CLAIMS APPENDIX
EVIDENCE APPENDIX w/ 4 ATTACHMENTS
RELATED PROCEEDINGS APPENDIX

Our credit card payment form in the amount of **$500.00** is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Gregory J. Maier
Registration No. 25,599

Christopher D. Ward
Registration No. 41,367

Customer Number
22850
(703) 413-3000 (phone)
(703) 413-2220 (fax)

DOCKET NO: 206576US3

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
TAKASHI OISHI, ET AL.	: EXAMINER: HORTON, Y.
SERIAL NO: 09/847,084	:
RCE FILED: NOVEMBER 20, 2003	: GROUP ART UNIT: 3635
FOR: DOOR FOR REFRIGERATOR AND METHOD OF PRODUCING THE DOOR FOR REFRIGERATOR	:

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

The Appellants hereby submit an appeal brief in compliance with 37 CFR 41.37 to appeal the final rejection of Claims 1 and 3-9, as set forth in the final Office Action dated December 2, 2004. The appeal brief is being submitted with the fee set forth in 37 CFR 41.20(b)(2).

I. REAL PARTY IN INTEREST

The real party in interest is Mitsubishi Denki Kabushiki Kaisha of Tokyo, Japan.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claim 2 has been canceled. Claims 1 and 3-9 are active, finally rejected, and appealed.

IV. STATUS OF AMENDMENTS

All amendments have been entered. No amendments after final were submitted.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to a door for a refrigerator and a method of producing a door for a refrigerator. (Page 1, lines 7-9.)

The claimed invention includes a door for a refrigerator comprising an inner panel combined with a door panel (page 7, lines 8-12 and Figures 1, 2, 5, and 6), a door cap fitting into the door panel and the inner panel in an upper portion (page 7, lines 12-13 and Figure 1), and a handle fitting into the door panel and the inner panel in a bottom portion (page 7, lines 13-14 and Figure 1). The door for the refrigerator has a heat insulating foam material injected inside (page 7, lines 14-15 and Figures 2, 5, and 6). Draw forming is provided at a position near an edge of at least either side of the door panel at a position away from the edge at approximately between 4 and 16% of a full width of the door panel such that a metal sheet for keeping the door panel from warping or getting uneven is not required (page 7, line 16, through page 8, line 21 and Figures 1-6). The draw forming is provided in such a manner as to push the door panel outwards to form a convexity at a center portion of the door panel (page 7, lines 22-25 and Figures 2, 5, and 6). The door panel has a two-tone color (page 7, line 16), and the draw forming is provided on a boundary of colors (page 7, lines 22-23). Draw forming in the

draw-formed door is provided at a position away from the edge at approximately between 4 and 16% of a full width of the draw-formed door panel such that a metal sheet for keeping the door panel from warping or getting uneven is not required (page 8, lines 13-21 and Figures 3 and 4). The refrigerator door further comprises a gradation portion provided in the two-tone color (page 12, lines 14-18 and Figure 5), wherein the draw forming is provided on the gradation portion (page 12, lines 21-24 and Figure 5. A boundary of the colors is provided close to a center portion of the draw forming (page 13, lines 15-18 and Figure 6).

For example, in the non-limiting embodiment of Figures 1 and 2, a door (1) for a refrigerator includes an inner plate (2) combined with a door panel (3), a door cap (4) fitting into the door panel and the inner plate in an upper portion (Figure 1), and a handle (5) fitting into the door panel and the inner panel in a bottom portion (Figure 1). The door (1) has a heat insulating foam material (6) injected inside. Draw forming is provided at a position (Figure 1) near an edge of both sides of the door panel at a position away from the edge.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Issue 1: Whether the amendment filed on April 22, 2004, includes new matter under 35 U.S.C. §132.

Issue 2: Whether Claim 1 is not patentable as obvious under 35 U.S.C. § 103(a) over Figure 7 of the present application (Figure 7).

Issue 3: Whether Claims 1, 3, and 8 are not patentable as obvious under 35 U.S.C. § 103(a) over Figure 7 in view of JP 63-104982.

Issue 4: Whether Claims 4-7 and 9 are not patentable as obvious under 35 U.S.C. § 103(a) over Figure 7 in view of JP 63-104982 and further in view of JP 60-058270.

VII. ARGUMENTS

ISSUE 1: Whether the amendment filed on April 22, 2004, includes new matter under 35 U.S.C. §132.

The final Office Action dated December 2, 2004, indicates that the specification "does not support the draw forming being positioning 4 to 16% of the total width of the door panel from the edge. The specification merely states that the draw forming is at least 10%." However, the Examiner has committed reversible error in concluding that the limitation regarding the draw forming being provided at a position away from the edge at approximately between "4 and 16%" of a full width of the door panel is new matter under 35 U.S.C. §132.

The Appellants respectfully submit that the above language added to Claims 1, 5, 8, and 9 in the amendment filed on April 22, 2004, does not constitute new matter. The Appellants note that the original disclosure includes not only the written description of the invention, but also the originally filed drawings. The subject matter recited in Claims 1, 5, 8, and 9 is clearly disclosed in Figure 3 of Appellants original application.[1]

Figure 3 of the original application clearly discloses a range of draw forming positions between 0 and 20%. Claims 1, 5, 8, and 9 were amended on April 22, 2004, to recite a sub range within the disclosed range. The specification describes a non-limiting embodiment on

pages 8 and 9 in order to illustrate that the door panel (3) is reinforced the most with the least amount of displacement when the draw forming is provided at a position of approximately 10%, as is evident from a review of the curve illustrated in Figure 3. However, Figure 3 clearly depicts experimental data points between 4 and 16% that show advantageous results. Thus, the original disclosure clearly provided support for the amendment filed on April 22, 2004, and therefore those amendments do not constitute new matter under 35 U.S.C. §132.

ISSUE 2: Whether Claim 1 is not patentable as obvious under 35 U.S.C. § 103(a) over Figure 7 of the present application (Figure 7).

The final Office Action dated December 2, 2004, indicates that Claim 1 is obvious in view of Figure 7 of the present application, despite noting that Figure 7 does not disclose draw forming positioned at an edge of either side of the panel and despite noting that Figure 7 does not disclose the percentage of draw forming with respect to the total width of the door panel. The Examiner has committed reversible error in concluding that Claim 1 is obvious in view of Figure 7, as there is no teaching of all of the claimed limitations in Figure 7 and since there is no motivation to make the modifications suggested in the final Official Action to arrive at the claimed invention.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify

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1 See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without

the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Appellants submit that a *prima facie* case of obviousness has not been established in the present case because (1) the reference does not teach or suggest all of the claim limitations, and (2) there is no suggestion or motivation to modify the reference to arrive at the presently claimed invention.

1. Figure 7 does not disclose all of the limitations recited in Claim 1.

Claim 1 recites a door comprising, among other features, an inner panel combined with a door panel, where draw forming is provided at a position near an edge of at least either side of the door panel at a position away from the edge at approximately between 4 and 16% of a full width of the door panel.

a. Figure 7 does not disclose draw forming is provided at a position near an edge of at least either side of the door panel at a position away from the edge.

The final Official Action acknowledges that draw forming is provided at a position near an edge of at least either side of the door panel at a position away from the edge is not disclosed in Figure 7. However, the final Official Action indicates that the draw forming feature is a method step, and therefore no patentable weight has been given to this limitation. The final Office Action asserts that the limitation "draw forming" is a method limitation in an apparatus claim, and that no patentable weight should be given to such a method step in an apparatus claim. The Appellants respectfully disagree with this assertion.

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introducing new matter."

Claim 1 expressly recites draw forming that is provided at a position near an edge of at least either side of the door panel at a position away from the edge, and such a limitation is not simply a process limitation, but rather clearly includes structural features. Thus, a draw formed portion has a specified structural position with respect to other claimed structural features. More specifically, the draw forming is provided at a position near an edge of at least either side of the door panel at a position away from the edge. This structural positional relationship must be given patentable weight when considering the patentability of Claim 1.

However, even assuming for the sake of argument, that Claim 1 includes a product-by-process limitation, MPEP § 2113 clearly states that patentable weight must be given to structural features resulting from the method steps.[2] Thus, the positional structural features defined in Claim 1 with respect to the draw forming clearly must be given patentable weight.

Thus, as the final Official Action acknowledges that Figure 7 does not disclose draw forming that is provided at a position near an edge of at least either side of the door panel at a position away from the edge, a *prima facie* case of obviousness has not been established with respect to Claim 1 in view of Figure 7. Clearly, Figure 7 does not disclose or even suggest a draw forming feature that is at a position away from an edge, as defined in Claim 1.

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2 The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.).

b. Figure 7 does not disclose draw forming at a position away from the edge at approximately between 4 and 16% of a full width of the door panel.

Furthermore, the final Official Action acknowledges that Figure 7 does not disclose the percentage of draw forming with respect to the total width of the door panel recited in Claim 1 as "approximately between 4 and 16% of a full width of the door panel." In fact, Figure 7 does not disclose or even suggest any percentage of draw forming with respect to a total width of the door panel. Figure 7 merely depicts a door having a metal sheet placed between a door panel (3) and heat insulating foam material in order to prevent the door from getting uneven due to thermal shrinkage or expansion of the insulating foam material. Figure 7 is silent with respect to any draw forming being provided in the door, and thus is silent with respect to the location of such a feature.

Thus, as the final Official Action acknowledges that Figure 7 does not disclose draw forming approximately between 4 and 16% of a full width of the door panel, a *prima facie* case of obviousness has not been established with respect to Claim 1 in view of Figure 7, since Figure 7 does not teach all of the limitations recited therein.

2. No motivation existed to modify Figure 7 to arrive at the invention of Claim 1

a. No motivation existed to modify Figure 7 to arrive at draw forming provided at a position near an edge of at least either side of the door panel at a position away from the edge.

Even assuming for the sake of argument that Figure 7 does depict a door provided with draw forming, there is no teaching or suggestion of a criticality in a location of the draw forming in Figure 7. Figure 7 does not disclose the position of the draw forming as a result-effective variable, and therefore one of skill in the art would not have been motivated to modify the configuration thereof.

The Appellants' invention is concerned with the amount of maximum deflection experienced by a given amount of insulation inside a door provided with draw forming at the location as claimed in order to eliminate, or significantly reduce, the thermal shrinking or expansion problems outlined in Appellants' specification.[3] There is nothing in Figure 7 or in the body of knowledge generally available to one of ordinary skill in the art that teaches or suggests modifying the configuration in Figure 7 to arrive at draw forming provided at a position near an edge of at least either side of the door panel at a position away from the edge, as recited in Claim 1. A factual issue such as this must be supported by "substantial evidence" under the Administrative Procedures Act.[4] The final Office Action is devoid of any evidence, let alone substantial evidence, in support of the unsubstantiated conclusion that this feature of Claim 1 is obvious in view of Figure 7.

Thus, no motivation existed to modify Figure 7 to arrive at the invention recited in Claim 1.

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3 See, for example, Specification, page 2, lines 2-12.
4 *Dickenson v. Zurko*, 119 S. Ct. 1816, 50 USPQ 2d 1930 (1999); *In re Gartside*, 53 USPQ 2d 1769 (Fed. Cir. 2000).

b. No motivation existed to modify Figure 7 to arrive at draw forming at a position away from the edge at approximately between 4 and 16% of a full width of the door panel.

The final Official Action concludes that it would be obvious to one of ordinary skill in the art to select a known draw forming percentage according to the use intended as an obvious matter of design choice. The Appellants respectfully disagree with such an unsubstantiated conclusion.

Again, even assuming for the sake of argument that Figure 7 does depict a door provided with draw forming, there is no teaching or suggestion of a criticality in draw forming percentage in Figure 7. Figure 7 does not disclose the position of the draw forming as a result-effective variable, and therefore one of skill in the art would not have been motivated to modify the configuration thereof.

There is nothing in Figure 7 or in the body of knowledge generally available to one of ordinary skill in the art that teaches or suggests modifying the configuration in Figure 7 to arrive at draw forming at a position away from the edge at approximately between 4 and 16% of a full width of the door panel, as recited in Claim 1. A factual issue such as this must be supported by "substantial evidence" under the Administrative Procedures Act.[5] The final Office Action is devoid of any evidence, let alone substantial evidence, in support of the unsubstantiated conclusion that this feature of Claim 1 is obvious in view of Figure 7.

Thus, no motivation existed to modify Figure 7 to arrive at the invention recited in Claim 1.

c. The rejection is based on hindsight considerations

The Appellants respectfully submit that the rejection is based on the improper application of hindsight considerations. It is well settled that it is impermissible simply to engage in hindsight reconstruction of the claimed invention, using Appellants' structure as a template and selecting elements from the references to fill in the gaps. *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Recognizing, after the fact, that a modification of the prior art would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. *In re Warner*, 397 F.2d 1011, 154 USPQ 173 (CCPA 1967).

d. Other indicia of unobviousness

In addition, the door of the present invention does not require a metal sheet because of the advantageous placement and configuration of the draw forming provided therein. Provision of the structural draw forming to a door as recited in Claim 1 advantageously enables the elimination of a needed element in the prior art, while at the same time retaining its function[6], which is a clear indicia of unobviousness.[7]

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5 *Id.*.
6 See discussion on page 9, line 25, through page 10, line 7, of the Apellants' specification.
7 "Note that the omission of an element and retention of its function is an indicia of unobviousness." See MPEP §2144.04(II)(B), citing In re Edge, 359 F.2d 896, 149 USPQ 556 (CCPA 1966), emphasis in original.

3. Conclusion

Thus, the final Official Action does not establish a *prima facie* case of obviousness with respect to Claim 1 in view of Figure 7.

Accordingly, reversal of the rejection of Claim 1 under 35 U.S.C. § 103(a) in view of Figure 7 is respectfully requested.

ISSUE 3: Whether Claims 1, 3, and 8 are not patentable as obvious under 35 U.S.C. § 103(a) over Figure 7 in view of JP 63-104982.

The final Office Action dated December 2, 2004, indicates that Claims 1, 3, and 8 are obvious in view of Figure 7 of the present application and JP 63-104892, despite noting that the cited references do not disclose the percentage of draw forming with respect to the total width of the door panel. The Examiner has committed reversible error in concluding that Claims 1, 3, and 8 are obvious in view of Figure 7 and JP 63-104892, as there is no teaching of all of the claimed limitations in the cited references and since there is no motivation to make the modifications suggested in the final Official Action to arrive at the claimed invention.

1. Figure 7 does not disclose all of the limitations recited in Claims 1, 3, and 8 or provide a motivation for modifying the invention described therein to arrive at the claimed invention.

As noted above in the discussion of ISSUE 2 and acknowledged in the final Official Action, Figure 7 does not disclose the percentage of draw forming with respect to the total width of the door panel recited in Claims 1, 3, and 8 as "approximately between 4 and 16% of

a full width of the door panel." In fact, Figure 7 does not disclose or even suggest any percentage of draw forming with respect to a total width of the door panel.

Additionally, as noted above in the discussion of ISSUE 2, there is nothing in Figure 7 or in the body of knowledge generally available to one of ordinary skill in the art that teaches or suggests modifying the configuration in Figure 7 to arrive at draw forming at a position away from the edge at approximately between 4 and 16% of a full width of the door panel, as recited in Claims 1, 3, and 8.

2. JP 63-104892 does not supplement the deficiencies in the teachings of Figure 7.

The final Official Action cites JP 63-104982 as describing that it is known in the art to form a door panel (4a) with draw forming as at (4) in Figures 1 and 2. However, JP 63-104982 is silent as to positioning the provided draw forming at the recited position in the recited range. Thus, JP 63-104982 does not remedy the above-noted deficiencies of Figure 7.

There is nothing in JP 63-104982 or in the body of knowledge generally available to one of ordinary skill in the art that teaches or suggests modifying the configuration in JP 63-104982 to arrive at draw forming at a position away from the edge at approximately between 4 and 16% of a full width of the door panel, as recited in Claims 1, 3, and 8. A factual issue such as this must be supported by "substantial evidence" under the Administrative Procedures Act.[8] The final Office Action is devoid of any evidence, let alone substantial evidence, in support of the unsubstantiated conclusion that this feature of Claims 1, 3, and 8 is obvious in view of the cited

8 *Dickenson v. Zurko*, 119 S. Ct. 1816, 50 USPQ 2d 1930 (1999); *In re Gartside*, 53 USPQ 2d 1769 (Fed. Cir. 2000).

references.

3. The rejection is based on hindsight considerations

The Appellants respectfully submit that the rejection is based on the improper application of hindsight considerations. It is well settled that it is impermissible simply to engage in hindsight reconstruction of the claimed invention, using Appellants' structure as a template and selecting elements from the references to fill in the gaps. *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Recognizing, after the fact, that a modification of the prior art would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. *In re Warner*, 397 F.2d 1011, 154 USPQ 173 (CCPA 1967).

4. Other indicia of unobviousness

In addition, the door of the present invention does not require a metal sheet because of the advantageous placement and configuration of the draw forming provided therein. Provision of the structural draw forming to a door as recited in Claims 1, 3, and 8 advantageously enables the elimination of a needed element in the prior art, while at the same time retaining its function[9], which is a clear indicia of unobviousness.[10]

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9 See discussion on page 9, line 25, through page 10, line 7, of the Apellants' specification.
10 "Note that the omission of an element and retention of its function is an indicia of unobviousness." See MPEP §2144.04(II)(B), citing In re Edge, 359 F.2d 896, 149 USPQ 556 (CCPA 1966), emphasis in original.

5. Conclusion

Thus, the final Official Action does not establish a *prima facie* case of obviousness with respect to Claims 1, 3, and 8 in view of Figure 7 and JP 63-104892.

Accordingly, reversal of the rejection of Claims 1, 3, and 8 under 35 U.S.C. § 103(a) in view of Figure 7 and JP 63-104892 is respectfully requested.

ISSUE 4: Whether Claims 4-7 and 9 are not patentable as obvious under 35 U.S.C. § 103(a) over Figure 7 in view of JP 63-104982 and further in view of JP 60-058270.

The final Office Action dated December 2, 2004, indicates that Claims 4-7 and 9 are obvious in view of Figure 7 of the present application and JP 63-104892 and further in view of JP 60-058270, despite noting that the cited references do not disclose the percentage of draw forming with respect to the total width of the door panel. The Examiner has committed reversible error in concluding that Claims 4-7 and 9 are obvious in view of Figure 7, JP 63-104892 and JP 60-058270, as there is no teaching of all of the claimed limitations in the cited references and since there is no motivation to make the modifications suggested in the final Official Action to arrive at the claimed invention.

1. Figure 7 and JP 63-104892 do not disclose all of the limitations recited in Claims 4-7 and 9 or provide a motivation for modifying the invention described therein to arrive at the claimed invention.

As noted above in the discussion of ISSUE 3 and acknowledged in the final Official

Action, Figure 7 and JP 63-104892 do not disclose the percentage of draw forming with respect to the total width of the door panel recited in Claims 4-7 and 9 as "approximately between 4 and 16% of a full width of the door panel." In fact, Figure 7 and JP 63-104892 do not disclose or even suggest any percentage of draw forming with respect to a total width of the door panel.

Additionally, as noted above in the discussion of ISSUE 3, there is nothing in Figure 7 and JP 63-104892 or in the body of knowledge generally available to one of ordinary skill in the art that teaches or suggests modifying the configuration in Figure 7 and JP 63-104892 to arrive at draw forming at a position away from the edge at approximately between 4 and 16% of a full width of the door panel, as recited in Claims 4-7 and 9.

2. JP 60-058270 does not supplement the deficiencies in the teachings of Figure 7 and JP 63-104892.

The final Official Action cites JP 60-058270 as describing that it is known in the art to two-tone color finish a metal/plastic." However, JP 60-058270 is silent as to draw forming and positioning the provided draw forming at the recited position in the recited range. Thus, JP 60-058270 does not remedy the above-noted deficiencies of Figure 7 and JP 63-104892.

There is nothing in JP 60-058270 or in the body of knowledge generally available to one of ordinary skill in the art that teaches or suggests modifying the configuration in JP 60-058270 to arrive at draw forming at a position away from the edge at approximately between 4 and 16% of a full width of the door panel, as recited in Claims 4-7 and 9. A factual issue such as this

must be supported by "substantial evidence" under the Administrative Procedures Act.[11] The final Office Action is devoid of any evidence, let alone substantial evidence, in support of the unsubstantiated conclusion that this feature of Claims 4-7 and 9 is obvious in view of the cited references.

3. The rejection is based on hindsight considerations

The Appellants respectfully submit that the rejection is based on the improper application of hindsight considerations. It is well settled that it is impermissible simply to engage in hindsight reconstruction of the claimed invention, using Appellants' structure as a template and selecting elements from the references to fill in the gaps. *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Recognizing, after the fact, that a modification of the prior art would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. *In re Warner*, 397 F.2d 1011, 154 USPQ 173 (CCPA 1967).

11 *Dickenson v. Zurko*, 119 S. Ct. 1816, 50 USPQ 2d 1930 (1999); *In re Gartside*, 53 USPQ 2d 1769 (Fed. Cir. 2000).

4. Other indicia of unobviousness

In addition, the door of the present invention does not require a metal sheet because of the advantageous placement and configuration of the draw forming provided therein. Provision of the structural draw forming to a door as recited in Claim 1 advantageously enables the elimination of a needed element in the prior art, while at the same time retaining its function[12], which is a clear indicia of unobviousness.[13]

5. Conclusion

Thus, the final Official Action does not establish a *prima facie* case of obviousness with respect to Claims 4-7 and 9 in view of Figure 7, JP 63-104892, and JP 60-058270.

Accordingly, reversal of the rejection of Claims 4-7 and 9 under 35 U.S.C. § 103(a) in view of Figure 7, JP 63-104892, and JP 60-058270 is respectfully requested.

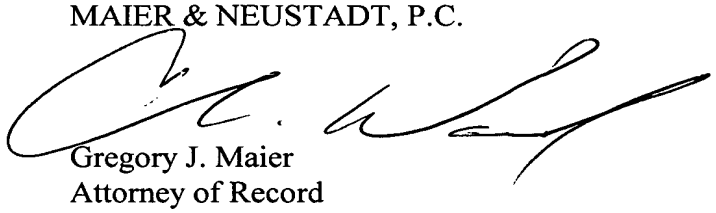
12 See discussion on page 9, line 25, through page 10, line 7, of the Apellants' specification.
13 "Note that the omission of an element and retention of its function is an indicia of unobviousness." See MPEP §2144.04(II)(B), citing In re Edge, 359 F.2d 896, 149 USPQ 556 (CCPA 1966), emphasis in original.

VIII. CONCLUSION

The Appellants therefore respectfully submit that all of the claims are patentable, and so requests that the final rejection be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier
Attorney of Record
Registration No. 25,599

Christopher D. Ward
Registration No. 41,367

Customer Number
22850
Tel. (703) 413-3000
Fax. (703) 413-2220
(OSMMN 10/01)

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CLAIMS APPENDIX

Claim 1 (Previously Presented): A door for a refrigerator, comprising:

an inner panel combined with a door panel;

a door cap fitting into the door panel and the inner panel in an upper portion; and

a handle fitting into the door panel and the inner panel in a bottom portion, the door for the refrigerator having a heat insulating foam material injected inside, wherein

draw forming is provided at a position near an edge of at least either side of the door panel at a position away from the edge at approximately between 4 and 16% of a full width of the door panel such that a metal sheet for keeping the door panel from warping or getting uneven is not required.

Claim 2 (Canceled)

Claim 3 (Previously Presented): The refrigerator door of claim 1, wherein the draw forming is provided in such a manner as to push the door panel outwards to form a convexity at a center portion of the door panel.

Claim 4 (Previously Presented): The refrigerator door of claim 1, wherein the door panel has a two-tone color, and the draw forming is provided on a boundary of colors.

Claim 5 (Previously Presented): A door for a refrigerator having a heat insulating foam material injected therein, the door comprising:

a draw-formed door panel;

an inner panel combined with the draw-formed door panel:

a door cap fitting into the draw-formed door panel and the inner panel in an upper portion: and

a handle fitting into the draw-formed door panel and the inner panel in a bottom portion,

wherein draw forming in the draw-formed door is provided at a position away from the edge at approximately between 4 and 16% of a full width of the draw-formed door panel such that a metal sheet for keeping the door panel from warping or getting uneven is not required, the draw-formed door panel has a two-tone color, and the draw forming is provided on a boundary of colors.

Claim 6 (Previously Presented): The refrigerator door of claims 4 or 5, further comprising:

a gradation portion provided in the two-tone color;

wherein the draw forming is provided on the gradation portion.

Claim 7 (Previously Presented): The refrigerator door of claims 4 or 5, wherein the boundary of the colors is provided close to a center portion of the draw forming.

Claim 8 (Previously Presented): A method of producing a door for a refrigerator which is composed of an inner panel combined with the door panel, a door cap fitting into the door panel and the inner panel in an upper portion, and a handle fitting into the door panel and the

inner panel in a bottom portion, the door for refrigerator having a heat insulating foam material injected inside, the method of producing the door for the refrigerator comprising:

draw forming the door panel at a position away from the edge at approximately between 4 and 16% of a full width of the door panel such that a metal sheet for keeping the door panel from warping or getting uneven is not required.

Claim 9 (Previously Presented): A method of producing a door for a refrigerator which is composed of an inner panel combined with the door panel, a door cap fitting into the door panel and the inner panel in an upper portion, and a handle fitting into the door panel and the inner panel in a bottom portion, the door for refrigerator having a heat insulating foam material injected inside, the method of producing the door for the refrigerator comprising:

draw forming the door panel at a position away from the edge at approximately between 4 and 16% of a full width of the door panel such that a metal sheet for keeping the door panel from warping or getting uneven is not required,

coloring the door panel in two-tone color, and

providing the draw forming on a boundary of colors.

EVIDENCE APPENDIX

The following documents are attached hereto:

(1) Figure 7 of the present application, which was filed on May 3, 2001;

(2) JP 63-104982, which was listed in an Information Disclosure Statement filed on December 31, 2002;

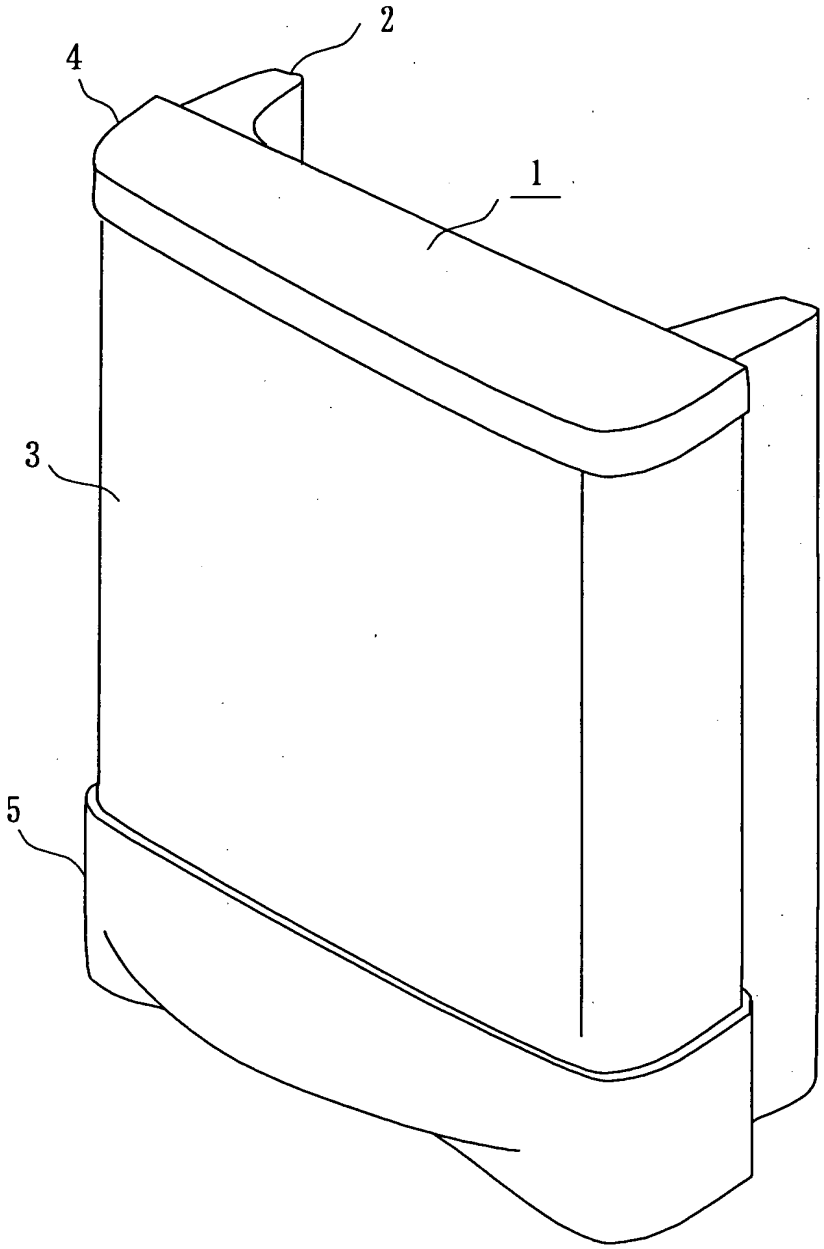
(3) JP 60-058270, which was listed in an Information Disclosure Statement filed on December 31, 2002; and

(4) Official Action dated December 2, 2004.

RELATED PROCEEDINGS APPENDIX

There are no related appeals or interferences.

Fig. 7
CONVENTIONAL ART



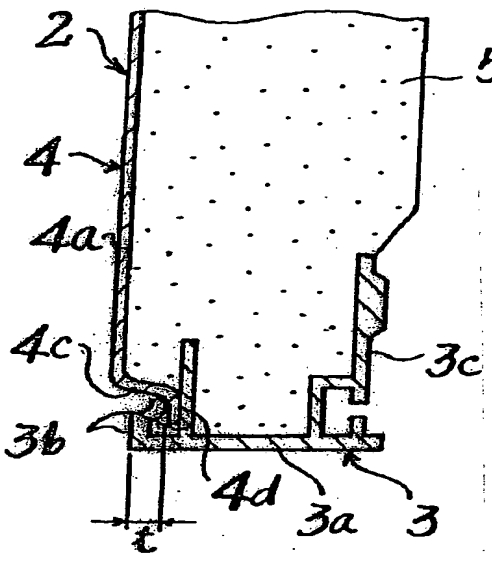
FILED BY IDS

(19) Patent Office: JP
(11) Unexamined Utility Model Publication No. Sho 63-104982
(43) Publication Date: July 7, 1988
(54) Title of the Invention: Heat Insulating Door for Refrigerator
(21) Filing No.: Sho 61-200661
(22) Filing Date: December 25, 1986
(71) Applicant: Mitsubishi Denki Kabushiki Kaisha
(72) Inventor: SAITO, Masaru

[Embodiments]

--Omission-- With referring to Fig. 1 and Fig. 2, a reference numeral 4 denotes an outer door panel. With the outer door panel 4, a flange 4d provided parallel to a face plate 4a is formed in a unified manner all around the outer surface of the face plate 4a with a level-different portion 4c whose height (h) is larger in dimension than the thickness (t) of a narrow hold piece 3b on front of a frame component 3. The reference numeral 3 denotes the frame component, and a reference numeral 5 denotes heat insulating materials. --Omission-- According to the outer door panel 4, the flange 4d is held by fitting together by insertion between a pair of the narrow hold pieces 3b which are provided on the frame component 3. The face plate 4a is put toward on front of the narrow hold piece 3b to meet the frame component 3. The heat insulating materials are foam filled into a room created by the frame component 3 and the outer door panel 4. --Omission-- In the case of processing steel plates to form the level-different portion with draw forming, it is required to have a sophisticated design for the appearance of the heat insulating door. --Omission--

第 1 図
(Fig. 1)



2: Heat Insulating Panel

3: Frame Component

3a: Decorative Frame

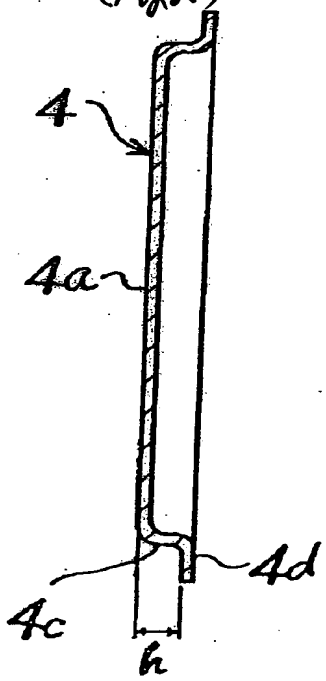
3b: Narrow Hold Piece

3c: Mounting Piece

4: Outer Door Panel

5: Heat Insulating Materials

第 2 図
(Fig. 2)



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代理人 大岩増雄(外2名)

公開実用 昭和63－104982

⑲日本国特許庁（JP）　⑪実用新案出願公開

⑫公開実用新案公報（U）　昭63－104982

⑤1Int.Cl.⁴	識別記号	庁内整理番号	⑬公開 昭和63年(1988)7月7日
F 25 D 23/02	304	C－7711－3L	

審査請求 未請求 （全 頁）

⑤4考案の名称　冷蔵庫の断熱扉

⑳実　願　昭61－200661
㉒出　願　昭61(1986)12月25日

⑦2考 案 者　斉　藤　　勝　静岡県静岡市小鹿３丁目18番１号　三菱電機株式会社静岡製作所内
⑦1出 願 人　三菱電機株式会社　東京都千代田区丸の内２丁目２番３号
⑦4代 理 人　弁理士 大岩　増雄　外２名

明　細　書

1．考案の名称

冷蔵庫の断熱扉

2．実用新案登録請求の範囲

(1) 1対の挟持片を前側縁部内周方向に突出させると共にガスケットおよび扉内板を固定る取付片を後側縁部内周方向に突出させた断面ほぼコ字状の枠部材と、上記挟持片間に嵌挿保持されるフランジが段差部を介して挟持片前側に突出する面板部と平行に形成してある扉外板とを備えたことを特徴とする冷蔵庫の断熱扉。

(2)扉外板は、合成樹脂材の成形品からなる実用新案登録請求の範囲第1項に記載の冷蔵庫の断熱扉。

3．考案の詳細な説明

〔産業上の利用分野〕

この考案は冷蔵庫の断熱扉に関するものである。

〔従来の技術〕

一般に、冷蔵庫は、第3図に示すように、断熱箱体からなる冷蔵庫本体1の全面開口を覆う断熱

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実開(本分類)10-9 8 2

扉２が、上記本体１に枢支している。

第４図は、実公昭６０－３９７４２号公報に示す従来の冷蔵庫の断熱扉の第３図Ⅳ－Ⅳ線に沿う部分断面図である。この断熱扉は、第４図に示すように、枠部材３と扉外板４とで構成される空間内に断熱材５を発泡充填させ、扉内板およびガスケット（ともに図示してない）を枠部材３に固定して構成される。枠部材３は、合成樹脂の押出成形品からなり、断熱扉２の外周面を形成する化粧枠３ａの前側縁部内周方向に扉外板４の外周部を嵌合保持する１対の挟持片３ｂが化粧枠３ａと直角に突出され、化粧枠３ａの後側縁部内周方向にガスケットおよび扉内板の外周部を固定する取付片３ｃが化粧枠３ａと直角に突出され、断面ほぼコ字状に形成されている。上記枠部材３は、挟持片３ｂと取付片３ｃの適所にＶ字形に切欠が設けられ、これらの切欠が設けられた部分を直角に屈曲して矩形枠に形成され、挟持片３ｂ間に平板状の塗装鋼板からなる扉外板４の外周部が嵌挿保持される。

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このような平板状の扉外板４の外周部を枠部材３で包囲したいわゆる額縁状の断熱扉２は、扉外板４と枠部材３とに色調の変化をつけることで、意匠性をよくし、商品価値を高めている。また、第５図に示すように、前側の挟持片３ｂの前面にアルミニウム蒸着フィルムなどの意匠フィルム3dを熱溶着したり、あるいは前側の挟持片３ｂと化粧枠３ａとで色調を変えたりしてさらに意匠効果を高めることもできる。

また、第６図に示すように、１つの挟持片３ｅを化粧枠３ａの内周側にこれと平行に形成した断面ほぼＬ字状の枠部材３と、面板部４ａから後側に直角に突出する周壁４ｂを絞り加工などによって形成した扉外板４とを有し、扉外板４の周壁4bを挟持片３ｅと化粧板３ａの間に嵌合挟持する断熱扉２が考えられる。なお、第６図に示す断熱扉の上述した以外の構成は、第４図に示すものと同様である。

〔考案が解決しようとする問題点〕

第４図、第５図に示す従来の冷蔵庫の断熱扉は、

意匠効果が高められ、生産ライン上での生産効率がよいが、扉外板３の挟持片３ｂが扉外板４より前側に突出しているので、断熱扉の下辺部に位置する扉外板４と前側の挟持片３ｂとの接合部にほこりやごみが付着して溜りやすく、また清掃しにくい。さらに、扉外板４の表面に水滴が付着すると、水滴が上記接合部付近に停滞して扉外板４と枠部材３の間に入り込み、扉外板を端面から発錆，腐蝕させるなど、意匠性や商品価値を損うという問題点があった。

第６図に示す冷蔵庫の断熱扉は、上述した第４図、第５図に示すものの清掃性や腐蝕性を改善するために考えられるものであるが、枠部材が前面に現れないので、意匠効果が低く、商品価値が劣り、さらに扉外板４の周壁４ｂを平坦面にすることがむずかしく、断熱材５を発泡充填させる時に、上記周壁４ｂと枠部材３の接合部から断熱材５の一部が漏出し、生産性を阻害するという問題点があった。

この考案は、上記のような問題点を解決するた

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めになされたもので、意匠性を損うことなく清掃性を向上させ、また扉外板が塗装鋼板からなる場合でも錆が発生しにくく、さらに生産性も比較的良好な冷蔵庫の断熱扉を得ることを目的としている。

〔問題点を解決するための手段〕

この考案に係る冷蔵庫は、1対の挟持片を前側縁部内周方向に突出させた断面ほぼコ字状の枠部材と、フランジが段差部を介して面板状と平行に形成してある扉外板とを備え、この扉外板のフランジを枠部材の挟持片間に嵌挿保持させ、扉外板の面板部を枠部材の挟持片前側に突出させたものである。

〔作　用〕

この考案における冷蔵庫の断熱扉は、扉外板のフランジを枠部材の挟持片間に嵌挿保持させ、扉外板の面板部を枠部材の前側に突出させたことにより、断熱扉の下辺部の扉外板と枠部材の接合部にごみやほこりが溜ることがなく、また、扉外板の面板部に水滴が滴下しても上記接合部に停滞し

て扉外板と枠部材の間に入り込むことがなく、枠部材が断熱扉の前面から見え、さらにフランジが段差部を介して面板部と一体に形成した扉外板が容易に得られ、断熱材の発泡充填時に上記接合部から断熱材が漏れることもない。

〔実施例〕

以下、この考案の一実施例を第１図、第２図について説明する。

第１図、第２図において、４は扉外板であり、扉外板４は枠部材３の前側の挟持片３ｂの厚さ寸法ｔより大きい高さ寸法（ｈ）の段差部４ｃを介して面板部４ａ外周側に面板部４ａと平行なフランジ４ｄが全周にわたり一体的に形成されている。また、３は枠部材、５は断熱材であるこれらは第４図に示すものと同様である。そして、扉外板４は、枠部材３に設けた１対の供片３ｂ間にフランジ４ｄが嵌挿保持され、面板部４ａが挟持片3b前側に突出して枠部材３と接合され、枠部材３と扉外板４で構成される空間内に断熱材５が発泡充填される。また枠部材３の取付片３ｃには第４図

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弁理士

に示すものと同様に図示しないガスケットおよび扉内板が固定される。以上のように構成された実施例の断熱扉2は第3図に示すものと同様に冷蔵庫本体に枢支される。

以上のように構成され、冷蔵庫本体の前面開口を覆って取付けられている実施例の断熱扉2は、扉外板4の面板部4aが最も前側に位置し、枠部材3が面板部4aより1段引込んだ位置になるので、断熱扉の下辺部の扉外板4と枠部材3の接合部にほこりやごみが溜らず、冷蔵庫を常に清潔に保つことができる。また、扉外板4の段差部4cが枠部材3の前側の挟持片3bの先端に突当たるので、扉外板4の面板部4aに水滴んふちゃくしても、扉外板4と枠部材2の間に水滴が入り込むことがなく、扉外板4が発錆することもなくなる。

なお、上記実施例では、扉外板4を鋼板の絞り成形品で構成した場合について説明したが、この考案における扉外板は合成樹脂材のシートの熱成形品が最も効果的である。すなわち、鋼板を絞り成形して段差加工を施す場合に、断熱扉は意匠的

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にすぐれた外観にすることが要求される。例えば美麗な塗装鋼板を使用しても、絞り成形時に金型によって塗装面に傷がつかないようにメッキ加工を施した金型を使用する必要があり、金型が高価になったり、絞り加工によって扉外板に歪が生じやくなり、歪を防ぐためにしわ押えのような機構が大規模となり、さらに断熱材の充填加工や、後の断熱扉組立加工時に鋼板の残留歪が扉外板を変形させることで、製造コストが高くなる。しかし、この実施例では、アクリルブタジエンスチロール（ＡＢＳ）やポリプロピレン（ＰＰ）などの発泡断熱材のウレタンに侵されない合成樹脂シートを用いて段差部を熱成形し、その後、扉外板の寸法に切断加工して作成することが、製造法上安価であり、品質的にも安定した扉外板を供給でき有利である。

〔考案の効果〕

以上説明したように、この考案によれば、フランジが段差部を介して面板部と平行に形成してある扉外板を用い、上記フランジを枠部材の内周方向に突出した１対の挟持片間に嵌挿保持させ、扉

外板の面板部を枠部材の前側に突出させたので、断熱扉の下辺部の扉外板と枠部材の接合部にごみやほこりが溜ることがなく、上記面板部に水滴が付着しても、上記接合部から扉外板と枠部材の間に入り込みにくく、冷蔵庫を清潔に保つことができ、扉外板が塗装鋼板の場合でも錆が発生しにくく、前面から枠部材が見えるので意匠性を損うことがなく、さらに生産性も比較的良好で、安価な断熱扉が得られるという効果がある。

4．図面の簡単な説明

第1図はこの考案の一実施例による冷蔵庫の断熱扉を示す要部の断面図、第2図は同扉外板の側断面図、第3図は従来の断熱扉を備えた冷蔵庫の外観斜視図、第4図は第3図のⅣ－Ⅳ線に沿う部分断面図、第5図は第3図の断熱扉の変形例を示す部分断面図、第6図は第3図の断熱扉の改良として考えられる断熱扉の部分断面図である。

2…断熱扉、3…枠部材、3a…化粧枠、3b…挟持片、3c…取付片、4…扉外板、4a…面板部、4c…段差部、4d…フランジ、5…断熱

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材。

なお、図中同一符号は同一または相当部分を示す。

代理人 大 岩 増 雄（外２名）

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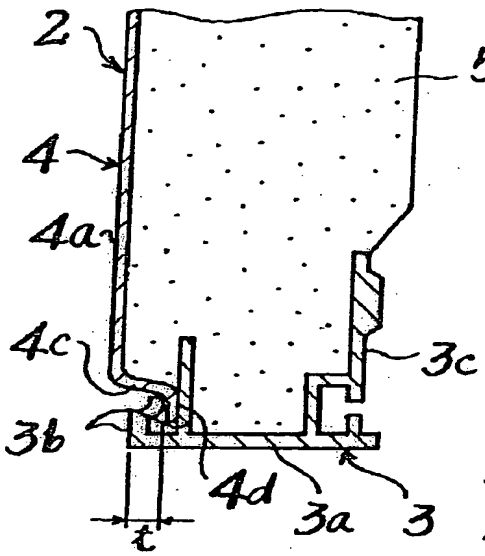
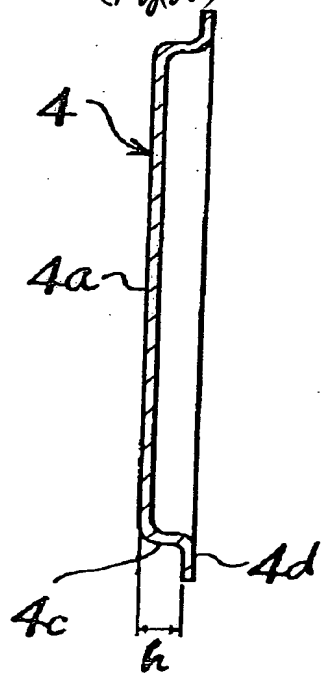
第 1 図
(Fig. 1)



2：断熱扉
3：枠部材
3a：化粧枠
3b：狭持片
3c：取付片
4：扉外板
5：断熱材

第 2 図
(Fig. 2)



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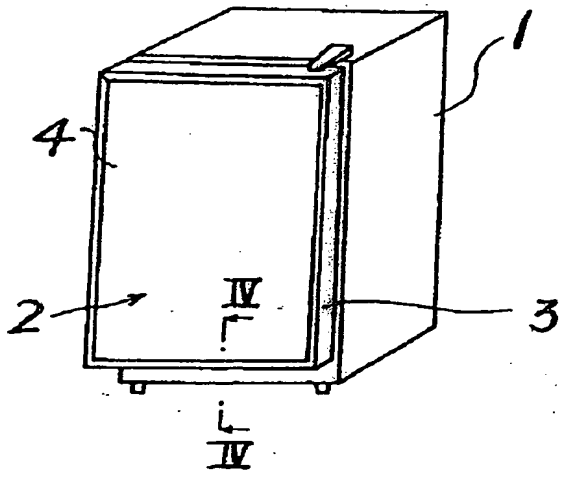
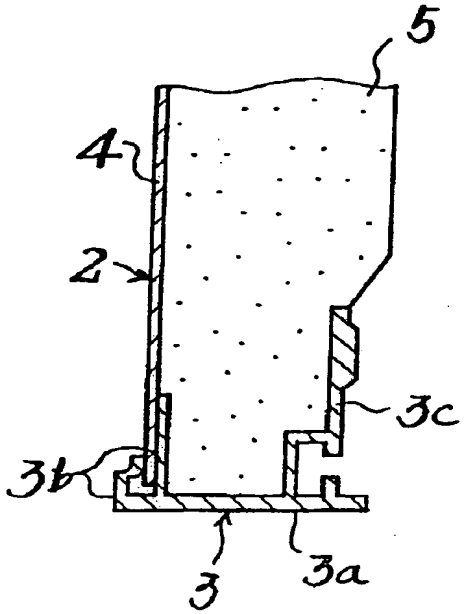
代理人 大岩増雄(外2名)

第 3 図



第 4 図



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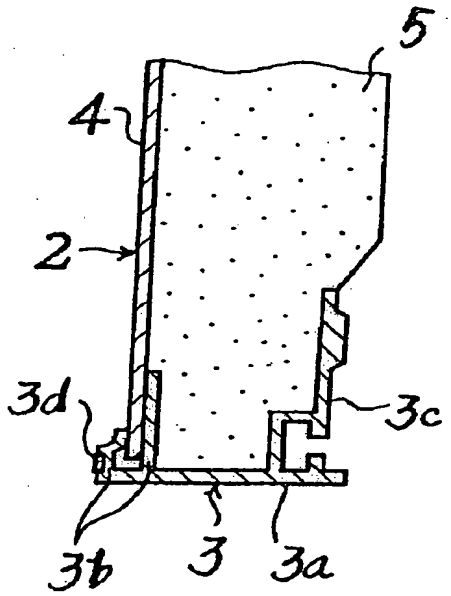
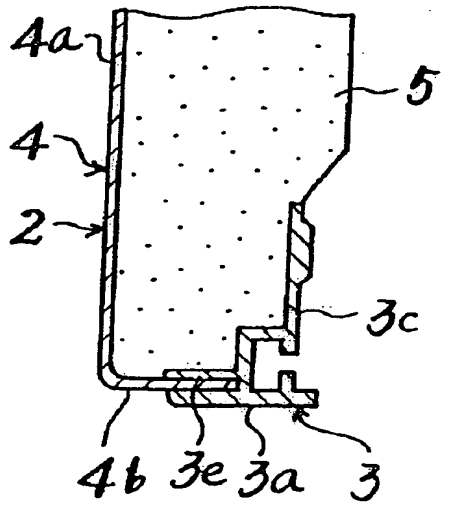
013.gif

第 5 図



第 6 図



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代理人 大岩増雄(外2名)

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PATENT ABSTRACTS OF JAPAN

(11)Publication number : 60-058270

(43)Date of publication of application : 04.04.1985

(51)Int.CI. B05D 5/06
B05D 1/36
B05D 7/14

(21)Application number : 58-167079

(22)Date of filing : 09.09.1983

(71)Applicant : KANSAI PAINT CO LTD

(72)Inventor : SERA KATSUYA
NAKAMURA SHIGERU

(54) TWO-TONE COLOR FINISHING METHOD

(57)Abstract:

PURPOSE: To perform two-tone color finish excellent in interlayer adhesiveness of coating films, by a method wherein two-color tone finish is applied by using two kinds or more of intermediate coats and, thereafter, the entire surface is painted with a thermosetting top coat forming a colored transparent or translucent film.

CONSTITUTION: After primer coating is pref. applied to an article to be coated such as a metal or plastic, two-tone color finish is performed by using an intermediate coat. As this intermediate coat, for example, an org. solution type thermosetting intermediate coat, which contains a short oil alkyd resin with an oil length of 30% or less and an amino resin as vehicle main components, is designated. In the next step, the entire surface of the two-tone color finished by heat curing is painted with a colored transparent of translucent thermosetting to coat so as to adjust the thickness thereof to 10W50 μ m besed on a cured film and heated to 100W300° C to cure the top coat. The resulting film has the aforementioned characteristics and good quality not resulting in yellowing due to baking and deterioration of weatherability.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

⑲日本国特許庁（JP）　⑪特許出願公開

⑫公開特許公報（A）　昭60－58270

⑤Int.Cl.⁴		識別記号	庁内整理番号	⑬公開 昭和60年(1985)4月4日
B 05 D	5/06		7048－4F	
	1/36		7048－4F	
	7/14		7048－4F	審査請求 未請求 発明の数 1 （全7頁）

⑭発明の名称　2トーンカラー仕上げ方法

⑳特　願　昭58－167079

㉒出　願　昭58(1983)9月9日

㉑発明者　世羅　勝也　愛知県西加茂郡三好町大字莇生字平地1番地　関西ペイント株式会社名古屋工場内

㉑発明者　中村　茂　愛知県西加茂郡三好町大字莇生字平地1番地　関西ペイント株式会社名古屋工場内

㉑出願人　関西ペイント株式会社　尼崎市神崎町33番1号

明　細　書

1．発明の名称

2トーンカラー仕上げ方法

2．特許請求の範囲

中塗り塗料で2トーンカラー仕上げに塗装を行なった後、その全面を、着色透明もしくは半透明の塗膜を形成する上塗り塗料で塗装することを特徴とする2トーンカラー仕上げ方法。

3．発明の詳細な説明

本発明は多色仕上げ塗装方法に関し、さらに詳しくは被塗物（特に自動車、家庭電器製品、車両など）の被塗面に、色調の異なる2種以上の塗膜が隣接しているように仕上げる、所謂2トーンカラー（3色以上も含む）に仕上げる新規な方法を提供するものである。

上記被塗物に美感性を付与するために、着色顔料を配合したりソリッドカラーエナメル塗料または着色顔料とメタリック顔料を配合したメタリック塗料を全面に塗装し、全面同一塗色でソリッドカラーもしくはメタリックカラーに仕上げることが一般に行なわれている。これらの方法によると、塗色を選択することによって種々の色調に仕上げることが可能であるが、個々の被塗物についてみると、その全面を同一塗色で単色に仕上げているために外観が単調になるおそれがある。

そこで、個々の被塗物の仕上り外観に色調の変化をもたせるために、着色の異なる2種以上塗膜が隣接しているように仕上げる、所謂2トーンカラー仕上げに塗装することが行なわれている。すなわち、従来の2トーンカラー仕上げ方法は、被塗物の全面にプライマー（主として電着塗料が用いられている）ならびに中塗り塗料を塗装し、該両塗膜を各々加熱硬化せしめ、次いで、塗色の異なる2種（3種以上を用いることもある）の熱硬化性上塗り塗料のうちの1種（塗料A）を目的とする所定の被塗面部分よりもやや広範囲に塗装し、加熱硬化させたのち、塗色の異なる他の上塗り塗料（塗料B）を塗装する被塗面部分以外に該塗料Bが塗着しないようにマスキングを行なったうえで、該塗料Bを目的とする所定部分のみに塗装し、

マスキング材を除去したのちに再び加熱して塗料Bの塗膜を硬化させるのである。塗料Bによる塗膜の少なくともその周縁部は塗料Aによる塗膜の周縁部上に形成されており、該両塗膜は少なくとも各々の周縁部においてオーバーラップしているのである。

かかる方法で2トーンカラー仕上げを行なうと、前記の単色仕上げに比べて塗膜外観に色調の変化を有せしめることができるという効果はあるが、しかしながら、2トーンカラー仕上げに用いる塗料（上記塗料Aおよび塗料B）はいずれも前記ソリッドカラー塗料ならびにメタリックカラー塗料と同様に、中塗り塗面に塗装するための熱硬化性の上塗り塗料であって、しかも塗料Bは塗料Aの塗膜を硬化させたのちに塗装せざるを得ないために、元来、熱硬化性上塗り塗料の硬化塗膜の表面は比較的不活性であることから、上記塗料Aと塗料Bとがオーバーラップしている部分における該両塗膜の層間付着性が十分でないという欠陥を有している。また、塗料Aによる塗膜は少なくとも2度にわたって加熱されるためにオーバーベイクとなり、黄変したり、さらには耐候性なども低下することもある。さらに、塗料Bによる塗膜が被塗面の最上層部に形成されるためにマスキング作業ならびに該マスキング材の除去を入念に行なう必要があり、これらが粗雑になると塗色の境界部を美麗に仕上げることが困難となり、しかも、マスキング材を除去した跡に塗料Bの塗膜によって段差が形成され、使用中にその段差部分から塗膜が剥離することもある。また、上塗り塗料をオーバーラップさせて2度以上塗装するために塗料コストが高くなるという欠陥も有している。

本発明は、2トーンカラー仕上げにおける上記した種々の欠陥を解消することを目的になされたものであって、その特徴は、2トーンカラーに仕上げるための塗色が異なる2種以上の塗料として中塗り塗料を用い、そして該塗料で2トーンカラーに仕上げたのち、全面を着色された透明もしくは半透明の塗膜を形成する熱硬化性上塗り塗料を塗装するところにある。その結果、上記の種々の欠陥を解消するとともに、前記方法で得られなかったよりすぐれた色調の塗膜を形成することができたのである。

すなわち、本発明は、中塗り塗料で2トーンカラー仕上げ塗装を行なった後、その全面を、着色透明もしくは半透明の塗膜を形成する上塗り塗料で塗装することを特徴とする2トーンカラー仕上げ方法に関するものである。

本発明において、「2トーンカラー仕上げ」とは、仕上がり外観が、被塗物の同一表面に色調の異なる着色塗膜が隣接して看取できるように塗装することであって、該着色塗膜の色調は2種類のみに限定されず、3種類以上で仕上げることも含まれるものと解すべきである。また、本発明における2トーンカラー仕上げは、被塗物の同一表面に、上下もしくは左右に色調を分けて仕上げることならびに線状、文字、柄模様などに仕上げることである。

本発明の特徴は、中塗り用塗料で2トーンカラー仕上げを行ない、次いで、その全面を着色透明もしくは着色半透明の上塗り用塗料を塗装するところにある。その結果、該中塗り用塗料は素地面もしくは下塗り（プライマー）塗膜ならびに上塗り塗膜との付着性、耐オーバーベイク性、平滑性などが一般的にすぐれているために、かかる中塗り用塗料によって2トーンカラー仕上げを行なうと、塗色を異ならしめた各塗膜のオーバーラップ部分における層間付着性がすぐれており、しかも該塗膜を2度以上加熱してもオーバーベイクによる性能劣化（たとえば、変色、耐色性など）が殆どもしくは全く認められないのである。さらに、中塗り塗料によって2トーンカラー仕上げを行なったのちに、着色透明もしくは半透明の塗膜を形成する上塗り塗料を塗装するために、2トーンカラー仕上げ工程においてマスキング材を除去する際に着色塗膜の境界部に発生する塗膜境界部の微小不均一性（ギザギザ）も外観上それを殆ど認めないすることができ、しかも、中塗り塗膜によって生じた段差も殆ど解消できたのである。また、該上塗り塗料は不透明にならない程度に着色されて

いるために、中塗り塗膜における2トーンカラーと相俟って、従来の2トーンカラー仕上げに比べて高明度、高彩度の多種多様の色調に仕上げることができるのである。また、上塗り塗膜自体の焼付は1回のみであるために、オーバーベイクの可能性がなくなり、塗膜の変色、長期耐光性の低下などを防止できた。さらに、塗装中にゴミ、ホコリなどが付着しても、上塗り塗料が単一色であるために、付着部位に関係なく容易に除去もしくは補修ができる。そして、上塗り塗膜が着色透明もしくは着色半透明であるために着色顔料の含有率が低くなって、顔料に起因する耐久性不良（チョーキング、色おち、ツヤ不良、肌あれなど）が著しく改善され、これらの不良性能を呈さない高価な顔料であればその使用を減じることでコストを低下できる。

本発明に係る2トーンカラー仕上げ方法についてさらに具体的に説明する。

本発明が適用できる被塗物は、2トーンカラー仕上げを行なうことによって色彩的な美粧性が向上するものであれば特に制限されないが、特に自動車のボンネット、ルーフ、ドア、フエンダーなど、オートバイのガソリンタンク、フエンダーなど、家庭電気製品（例えば、冷蔵庫、洗濯機など）の外板などに適用することが好ましい。また、該被塗物の材質として金属、プラスチックなどがあげられる。

本発明において、被塗物に中塗り塗料を直接塗装して2トーンカラー仕上げを行なうこともできるが、該中塗り塗膜の防食性、付着性などを向上させるためにあらかじめプライマーを塗装しておくことが好ましい。該プライマーとしては公知のものが使用でき、例えば電着塗装（アニオン形、カチオン形）、エポキシエステル系、エポキシ樹脂系、ポリウレタン系などがあげられる。

まず、本発明の方法は被塗物に、直接またはプライマーを塗装した後、中塗り塗料を用いて2トーンカラー仕上げを行なうのである。

本発明における中塗り塗料とは、それ自体公知のものであって、被塗面ならびに後記の上塗り塗膜との付着性がすぐれ、平滑性、耐オーバーベイク性、耐光性などの良好な塗膜を形成する塗料である。具体的には、油長30%以下の短油アルキド樹脂、油長20%以下の超短油アルキド樹脂もしくはオイルフリーポリエステル樹脂とアミノ樹脂とをビヒクル主成分とする有機溶液形熱硬化性中塗り塗料があげられる。これらの両アルキド樹脂ならびにオイルフリーポリエステル樹脂は、水酸基価60～140、酸価5～20であり、しかも変性用油成分として不飽和油を用いたものが特に好ましい。また、アミノ樹脂は、アルキル（炭素数1～5）エーテル化したメラミン樹脂、尿素樹脂、ベンゾグアナミン樹脂が適している。これら両樹脂の配合比は、固形分重量にもとづいて、上記アルキド樹脂および（または）オイルフリーポリエステル樹脂75～85%、特に80～85%、アミノ樹脂25～15%、特に20～15%であることが好ましい。さらに、上記アミノ樹脂をポリイソシアネート化合物やブロック化ポリイソシアネート化合物などに代えることができ、このうち、ポリイソシアネート化合物を用いると室温もしくは50～100℃程度の強制乾燥で塗膜が硬化するので、高温で加熱することが困難なプラスチック製被塗物などに使用するのが適している。また、該中塗り塗料の形態としては、有機溶液形が好ましいが、ハイソリッド形、水溶液（または水分散）形であってもさしつかえない。

該中塗り塗料による2トーンカラー仕上げは、それ自体公知の方法によって行なうことができる。すなわち、まず2トーンカラーに仕上げるための目的とする2種以上の色調の中塗り塗料をあらかじめ調製しておく。次いで、これらの塗料のうち塗装面積の大きい中塗り塗料（「塗料Ⅰ」と略称する）を、被塗面に、目的とする塗装部分よりも広範囲に塗装し、硬化せしめるのである。そして、他の塗色の中塗り塗料（「塗料Ⅱ」と略称する）を塗装すべき被塗面部分のみを露出させて、それ以外の表面をマスキングテープなどでマスキングしたのち、該塗料Ⅱを目的とする部分のみに塗装し、マスキングテープを除去してから、塗料Ⅱに

よる塗膜を硬化させるのである。その結果、塗料Ⅰの塗膜表面の周縁部に塗料Ⅱによる塗膜の一部ないし全部がオーバーラップしており、それによって塗色の異なる塗料Ⅰと塗料Ⅱとの塗膜が隣接して形成され、2トーンカラー仕上げが得られるのである。また、3色以上の2トーンカラー仕上げにするには、上記塗料Ⅱと同様にして順次塗装を行なえばよい。これらの中塗り塗料の塗装はエアースプレー、エアレススプレー、静電塗装、ハケなどで行なうことができ、その膜厚は少なくとも被塗面の色彩を隠ぺいする程度であればよいが、具体的には硬化後の膜厚にもとづいて10～40μが好ましい。中塗り塗膜の硬化は、100～180℃において5～30分加熱することによって行なわれ、強制乾燥ではそれ以下でもさしつかえない。

本発明では、上記のごとく中塗り塗料で2トーンカラーに仕上げたのち、着色透明もしくは着色半透明の熱硬化性上塗り塗料をその全面に塗装するのである。

該上塗り塗料は、仕上り外観（鮮映性、平滑性）耐候性（光沢保持性、保色性、耐白亜化性など）、耐薬品性、耐水性、耐ガソリン性、耐汚染性などがすぐれ、しかも硬度が高く、耐擦傷性、耐衝撃性、耐摩耗性などの良好な塗膜を形成する塗料であればよい。具体的には、従来、自動車外板に用いられている熱硬化性上塗り塗料が特に好適であり、例えば、アミノ・アクリル樹脂系またはポリウレタン・アクリル樹脂系の有機溶剤溶液型、非水ディスパージョン型、水溶液型、水分散型塗料が特に好適である。さらに、本発明で用いる上塗り塗料には、中塗り塗料によって形成した2トーンカラーが看取できる程度に着色顔料を配合する必要がある。該着色顔料としては、従来自動車用上塗り塗料に配合されている耐候性、耐薬品性、耐水性、分散性、貯蔵安定性、塗色安定性などのすぐれたものが好ましく、たとえば、二酸化チタン、カーボンブラック、透明性酸化鉄、モリブデートオレンジ、黄鉛、オーカーなどの無機質系顔料、キナクリドン、ベンゾイミダゾロン、ペリレン、アンスラキノン、ペリノン、イソインドリノン、アンスラピリミジン、フラバンスロン、フタロシアニン、インダスレン、ジオキサジン、チオインジゴ、キナクリドンなどのレッド、オレンジ、イエロー、グリーン、ブルー、バイオレット、マルーン色の有機質系顔料、アルミニウム粉、雲母粉、雲母状酸化鉄粉などのメタリック系顔料などがあげられる。これらの着色顔料の配合量は、各顔料の着色力および隠ぺい力などによって任意に選択することができ、具体的には、中塗り塗料によって仕上げた2トーンカラーが上塗り塗膜を介して看取できる程度に該上塗り塗料に配合するのである。つまり、形成した塗膜（上塗り塗膜）が透明もしくは半透明になる範囲内に上記着色塗料を配合するのである。そして、該上塗り塗料の塗装は前記中塗り塗料と同様な手段で行なえ、その膜厚は硬化塗膜にもとづいて10～50μが好ましく、該塗膜の硬化は100～180℃で5～30分加熱することによって行なえる。また、加熱硬化させることが困難なプラスチック製被塗物に対しては、常温もしくは100℃以下の強制乾燥で硬化するウレタン・アクリル樹脂系上塗り塗料を用いることが好ましい。上記のアクリル樹脂としては、数平均分子量5000～20000、水酸基価40～110、酸価5～25のものが特に好ましい。

実施例1

プライマー（エポキシ樹脂系カチオン電着塗料）を塗装した塗板に、先ず下側部分に、着色顔料としてシアニンブルー、カーボンブラック、二酸化チタンを配合した濃い青色に着色されたオイルフリーポリエステル・アミノ樹脂中塗り塗料（中塗A）を塗装し、140℃で30分加熱し、硬化せしめる。次いで、下部をマスキングした後、顔料として二酸化チタンを配合した白色に着色された上記同一樹脂組成の中塗り塗料（中塗B）を上側部分に塗装し、同様に加熱硬化させた。そして、マスキング部を除去したのち、顔料としてイソインドリン・イエローを配合した黄色に着色され、白黒いんぺい力で120μに調整されたアクリル樹脂・アミノ樹脂上塗り塗料（上塗A）を硬化塗

膜にもとづいて30～40μの膜厚に塗装し、加熱乾燥せしめた。なお、「白黒いんぺい力」とは、市松模様に白と黒に着色されたアート紙に塗料を塗装し、硬化せしめた後、その白と黒が識別され得なくなった膜厚をいう。

上記工程で得られた塗膜の2トーン境界部には階段状の段差が殆どなく、また、上側部は中塗Bの白と上塗Aの半透明黄との複合色として色相的には光学的に減算混合の様態を呈示するため、上塗塗料中に白顔料と黄顔料を混合した場合に得られる加算混合色では得られない、且つ本来使用した黄顔料で上塗塗料として実際上使用に耐え得るいんぺい力を保有させた場合に得ることの絶対に出来ない高明度、高彩度の鮮明な黄色となる。

次に、下側部は中塗Aの青色と黄色半透明の上塗Aとの相互作用で複合色として透明感の強い濃緑色として見え、そのコントラストは鮮かである。

こうして得られた塗装系は、上に述べた如く、上塗一回塗装で、複合色のメリットを生かして従来の上塗りソリッドカラーの利用では得ることの出来ない鮮明な色相のコントラストを持つ2トーンカラー塗膜を得られるばかりでなく、従来の上塗りで懸念されていた大量の有彩色着色顔料配合の場合に惹起される顔料に起因する塗膜の耐久性の低下を防止できたばかりか上塗りに使用される高価な黄顔料の使用量を減じることによる安価で鮮明な塗膜を提供することが可能となった。

上記の各塗料配合組成

中塗A

オイルフリーポリエステル樹脂ワニス	59
メラミン樹脂ワニス	25
シアニンブルー	7
カーボンブラック	1
二酸化チタン	8
合計	100

中塗B

オイルフリーポリエステル樹脂ワニス	35
メラミン樹脂ワニス	15
二酸化チタン	50
合計	100

上塗A

アクリル樹脂ワニス	69
メラミン樹脂ワニス	18
イソインドリンイエロー	10
アゾオレンジ	2
二酸化チタン	1
合計	100

実施例2

下地調整を施したウレタン板の下部に、実施例1と同様手順にて、先ずカーボン・ブラックで着色された黒色の超短油アルキド樹脂・ウレタン系中塗り塗料（中塗C）を塗装し、80℃の乾燥炉で30分間乾燥した後下部をマスキングし、二酸化チタン、カーボン・ブラック酸化鉄を含み、赤さび色に着色された超短油アルキド樹脂・ウレタン中塗り塗料（中塗D）を塗装し、マスキングを取り除いて、再度80℃の乾燥炉で30分間乾燥する。

次に、上塗り塗料として、アルミフレーク顔料とペリレン顔料で着色され白，黒いんぺい力で60μに調整されたアクリル・ウレタン塗料（上塗B）を乾燥膜厚が20μになるように塗装し、さらに、アクリル・ウレタンクリヤー塗料を乾燥膜厚が30μになるように重ね塗りし、80℃の乾燥炉で30分間乾燥した。

得られた2トーンカラー仕上げ塗膜は、2トーン境界部に段差が殆どなく、重ね塗り部の物理的強度がすぐれていることは言うまでもなく、上部は中塗りDの赤と上塗りBのメタリック赤の複合色として鮮明な赤色メタリック色が得られ、下部は中塗りCの黒との複合効果で暗赤色メタリックトーンとなり効果的な2トーン色が得られる。

得られた塗色は鮮かで且つ落ちついた2トーン色であり、且つ上塗りに配合する高価なペリレン顔料を大巾に減少せしめ得ることで安価に得られる利点を有する。

これらの実施例1，2で得た2トーンカラー仕上げ塗膜において、各塗膜の層間付着性がすぐれ、焼付による黄変、耐候性劣化などが認められなかった。

塗料配合

中塗C

超短油アルキド樹脂ワニス	89
ウレタン樹脂ワニス	6
カーボンブラック	5
合計	100

中塗D

超短油アルキド樹脂ワニス	48
ウレタン樹脂ワニス	4
二酸化チタン	27
カーボンブラック	1
酸化鉄	20
合計	100

上塗B

アクリル樹脂ワニス	85
ウレタン樹脂ワニス	8
アルミフレーク	4
ペリレン・レッド	3
合計	100

比較例1

下地調整を施したウレタン板全面に、カーボン・ブラックで着色した超短油アルキド・ウレタン中塗塗料（中塗E）を塗装し、80℃の乾燥炉で30分間乾燥した後、下部に、カーボン・ブラック、ペリレンレッド、アルミフレークを配合した暗赤色メタリックに着色されたアクリル・ウレタン上塗塗料（上塗C）を乾燥膜厚が15μになるように塗装し、続いてアクリル・ウレタンクリヤー塗料を乾燥膜厚が30μになるように塗装し、80℃の乾燥炉で30分間乾燥した。次いで、下部をマスキングし、ペリレンレッドとアルミフレークで着色し、白黒いんぺい力で10μに調整されたアクリル・ウレタン上塗塗料（上塗D）を乾燥膜厚が20μになるように塗装し、さらに、アクリル・ウレタンクリヤー塗料を30μ塗装し、マスキングを除去した後80℃の乾燥炉で30分間乾燥する。

こうして得られた塗膜は、2トーン境界部の段差があるため、物理的外力で欠け落ちることが多くまた、一回目のクリヤー塗料が一度焼き付けられているため二回目の上塗塗料との付着力が弱く外力により容易にはがれる。また、塗料配合から判断されるように、上塗り一層で下地を覆い隠す為いいんぺい力を持たねばならないため、高価な着色顔料を多く使用した。

塗料配合

中塗E

アルキド樹脂ワニス	89
ウレタン樹脂ワニス	6
カーボンブラック	5
合計	100

上塗C

アクリル樹脂ワニス	81
ウレタン樹脂ワニス	8
アルミフレーク	4
カーボンブラック	2
ペリレンレッド	5
合計	100

上塗D

アクリル樹脂ワニス	76
ウレタン樹脂ワニス	6
アルミフレーク	8
ペリレンレッド	10
合計	100

比較例2

プライマー塗装鋼板全面に二酸化チタン、カーボンブラックでグレー色に着色されたオイルフリーポリエステル・アミノ樹脂中塗り塗料（中塗F）を塗装し、加熱、乾燥せしめる。次に、下部にカーボンブラック、シアニングリーン、シアニンブルーで濃緑色に着色され、白黒いんぺい力で40μに調整されたアクリル・アミノ樹脂上塗塗料（上塗E）を乾燥膜厚が30～40μになるように塗装し、加熱乾燥せしめる。そして、下側部分をマスキングした後、イソインドリンイエロー、二酸化チタンで黄色に着色され、白黒いんぺい力で40μに調整されたアクリル・アミノ樹脂上塗り塗料（上塗F）を30～40μ塗装し、マスキ

ングを除去した後加熱乾燥せしめる。

得られた塗膜は、上塗塗料だけで中塗りの色を隠ぺいせねばならないため、高価な着色顔料を多量に配合せねばならず、その結果として、塗膜の光沢感も損なわれまた、色彩面でも実施例で得られる優れたコントラストの鮮かな色が得られないばかりか、上塗Eの塗装時に生ずるダスト粒子の凹凸の影響が上塗Fに表れ光沢感をさらに低下せしめることとなった。また、上塗りEと上塗りFとが重なった部分における両塗膜面の付着性も十分でなかった。

塗料配合例

中塗F

ポリエステル樹脂ワニス	35
メラミン樹脂ワニス	15
二酸化チタン	49
カーボンブラック	1
合　計	100

上塗E

ポリエステル樹脂ワニス	56
メラミン樹脂ワニス	24
カーボンブラック	1
シアニングリーン	15
シアニンブルー	4
合　計	100

上塗F

ポリエステル樹脂ワニス	42
メラミン樹脂ワニス	18
イソインドリンイエロー	20
二酸化チタン	20
合　計	100

特許出願人　(140)関西ペイント株式会社

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,084	05/03/2001	Takashi Oishi	206576US3	6987

22850 7590 12/02/2004

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
HORTON, YVONNE MICHELE	

ART UNIT	PAPER NUMBER
3635	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

RECEIVED: 12/06/04
OBLON, SPIVAK, McCLELLAND
MAIER & NEUSTADT, P.C.
DOCKETING DEPT.
Initials/Date Docketed: KKR 12/07/04
Type of Resp(s): AP / N.A (1st)
Due Date(s): 3/02/05 / 4/02/05

Office Action Summary	Application No.	Applicant(s)	
	09/847,084	OISHI ET AL.	
	Examiner	Art Unit	
	Yvonne M. Horton	3635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed 4/22/04 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: THE SPECIFICATION does not support the draw forming being positioned 4 to 16% of the total width of the door panel from the edge. The specification merely states that the draw forming is at least 10%..

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art Figure 7. Prior Art Figure 7 discloses the use of a door panel (3), an inner panel (2), a door cap (4), and a handle (5); wherein foam heat insulation (not shown), page 1, line 18 of the instant application, is provided therein. Prior Art Figure 7 discloses the basic claimed door except for the use of draw forming positioned at an edge of either side of the panel. The applicant is reminded that the method of forming a device is not germane to the issue of patentability of the device itself. Draw forming is a method step that appears to be a technique used to stretch a material, in particular metal/plastic specifically at the edges to

obtain a desired shape or configuration. In apparatus claims it is the final product that is given patentable consideration. Hence, the step of draw forming has not been given patentable weight. Prior Art Figure 7 discloses the basic claimed door except for the percentage of draw forming performed with respect to the total width of the door panel. Although there is no discussion regarding the amount of draw forming performed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select a known draw forming percentage according to the use intended as an obvious matter of design choice. The amount of draw forming determines how much of the remainder of the panel will curve. The curve further determines how much insulation the panel will be able to enclose. A door with less draw forming will have less curvature and will in turn be able to hold less insulation; which will be less effective as far as insulation is concerned. Whereas a do having more draw forming will produce a larger curve in the panel and would hold much more insulation. This door will in turn will be much more cost effective as far as the insulation and heat are concerned.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art Figure 7 in view of Japanese Utility Model #63-104982. Prior Art Figure 7 discloses the use of a door panel (3), an inner panel (2), a door cap (4), and a handle (5); wherein foam heat insulation (not shown), page 1, line 18 of the instant application, is provided therein. The applicant is reminded that the method of forming a device is not germane to the issue of patentability of the device itself. Draw forming is a method step that appears to be a technique

used to stretch a material, in particular metal/plastic specifically at the edges to obtain a desired shape or configuration. In apparatus claims it is the final product that is given patentable consideration. Hence, the step of draw forming has not been given patentable weight. Prior Art Figure 7 discloses the basic claimed door except for the use of draw forming positioned at an edge of either side of the panel. Japanese Utility Model #63-104982 teaches that it is known in the art to form a door panel (4a) with draw forming as at (4) in figures 1 and 2. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the door of Prior Art Figure 7 with the face plate of Japanese Utility Model #63-104982 in order to present a door that is not only a heat insulating door, but that is also sophisticated in appearance. Prior Art Figure 7 discloses the basic claimed door except for the percentage of draw forming performed with respect to the total width of the door panel. Although there is no discussion regarding the amount of draw forming performed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select a known draw forming percentage according to the use intended as an obvious matter of design choice. The amount of draw forming determines how much of the remainder of the panel will curve. The curve further determines how much insulation the panel will be able to enclose. A door with less draw forming will have less curvature and will in turn be able to hold less insulation; which will be less effective as far as insulation is concerned. Whereas a do having more draw forming will produce a larger curve in the panel and

would hold much more insulation. This door will in turn v=be much more cost effectively as far as insulation and heat are concerned.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art Figure 7 in view of Japanese Utility Model #63-104982 as applied to claim 1 above, and further in view of JP 60-058270. Prior Art Figure 7, as modified by, Japanese Utility Model #63-104982 discloses the basic claimed door except for two-tone coloring the panel. JP 60-058270 teaches that it is known in the art to two-tone color finish a metal/plastic. Although JP 60-058270 does not specifically teach two-tone coloring on a boundary, per se', it would have been obvious to one having ordinary skill in the art at the time the invention was made to color finish the panel of Prior Art Figure 7, as modified by, Japanese Utility Model #63-104982 in order to create a member that is aesthetically pleasing but that is also enhance at the draw forming portions thereby further defining the shape made by draw forming the member.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art Figure 7 in view of Japanese Utility Model #63-104982 as applied to claim 1 above, and further in view of JP 60-058270. Prior Art Figure 7 discloses the basic claimed door except for the use of draw forming positioned at an edge of either side of the panel. Japanese Utility Model #63-104982 teaches that it is known in the art to form a door panel (4a) with draw forming as at (4) in figures 1 and 2. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the door of Prior Art Figure 7 with the face plate of Japanese Utility Model #63-104982 in order to present a

door that is not only a heat insulating door, but that is also sophisticated in appearance. Prior Art Figure 7, as modified by, Japanese Utility Model #63-104982 discloses the basic claimed door except for two-tone coloring the panel. JP 60-058270 teaches that it is known in the art to two-tone color finish a metal/plastic. Although JP 60-058270 does not specifically teach two-tone coloring on a boundary, per se', it would have been obvious to one having ordinary skill in the art at the time the invention was made to color finish the panel of Prior Art Figure 7, as modified by, Japanese Utility Model #63-104982 in order to create a member that is aesthetically pleasing but that is also enhance at the draw forming portions thereby further defining the shape made by draw forming the member. Regarding claim 6, Prior Art Figure 7, as modified by, Japanese Utility Model #63-104982 and JP 60-058270 does not specifically teach forming a gradation portion. However, a gradation involves advancement by successive stages of tones or shades as from one tone to another. Hence, providing the door of Prior Art Figure 7, as modified by, Japanese Utility Model #63-104982 and JP 60-058270 is also an obvious matter of design that enhances the appearance of the portion stretched or bent by draw forming. Thus, it would have been obvious to one having ordinary skill in the art to form the door of Prior Art Figure 7, as modified by, Japanese Utility Model #63-104982 and JP 60-058270 with a gradation portion in order to create a door wherein the draw forming portion is enhanced and the overall appearance of the door is accentuated. In reference to claim 7, position of the colored portion is also an obvious matter of design choice that depends upon which portion of the door is

required to be accentuated. Obviously, positioning the colored portion near a center of the door would present a door panel that is readily pleasing in appearance and strengthened at a center thereof.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art Figure 7 in view of Japanese Utility Model #63-104982. Prior Art Figure 7 discloses the method of producing a door (1) composed of a door panel (3), an inner panel (2), a door cap (4), and a handle (5); wherein foam heat insulation (not shown), page 1, line 18 of the instant application, is provided therein. Prior Art Figure 7 discloses the basic claimed door except for the use of draw forming positioned at an edge of either side of the panel. Japanese Utility Model #63-104982 teaches that it is known in the art to form a door panel (4a) with draw forming as at (4) in figures 1 and 2. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the method of producing a door of Prior Art Figure 7 with the step of draw forming a face plate, as taught by Japanese Utility Model #63-104982, in order to present a door that is not only a heat insulating door, but that is also sophisticated in appearance.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art Figure 7 in view of Japanese Utility Model #63-104982 and JP 60-058270. . Prior Art Figure 7 discloses the method of producing a door (1) composed of a door panel (3), an inner panel (2), a door cap (4), and a handle (5); wherein foam heat insulation (not shown), page 1, line 18 of the instant application, is provided therein. Prior Art Figure 7 discloses the basic claimed

door except for the step of draw forming at an edge of either side of the panel and except for the step of two-tone coloring the panel. Japanese Utility Model #63-104982 teaches that it is known in the art to use the step of draw forming a door panel (4a) as at (4) in figures 1 and 2 and JP 60-058270 teaches that it is known in the art to color a metal/plastic a two-tone color finish. JP 60-058270 does not specifically teach two-tone coloring on a boundary, per se'. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the method of Prior Art Figure 7 with the draw forming step of Japanese Utility Model #63-104982 and the step of color finishing of JP 60-058270 in order to create a member that is aesthetically pleasing but that is also enhanced at the draw forming portions thereby further defining the shape made by draw forming the member.

Response to Arguments

Applicant's arguments filed 4/26/04 have been fully considered but they are not persuasive. Regarding the applicant's argument that the draw forming percentage eliminates the need for an internal metal part, this may be so; however, it is apparent that the requirement of an additional panel and the draw forming. Percentage is an obvious matter of design choice. For instance, if the door were being used in conditions that did not require as much insulation, it would be obvious that the additional panel would not be needed. Whereas, if the door is needed in areas that require a substantial amount of insulation perhaps an additional panel and added insulation would be required.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvonne M. Horton whose telephone number is (703) 308-1909. The examiner can normally be reached on 6:30 am - 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl D. Friedman can be reached on (703) 308-0839. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YMH
Art Unit 3635
11/29/04

Carl D. Friedman
Supervisory Patent Examiner
Group 3600